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GOLD AND COAL RESOURCES OF ALASKA.

SPEECH

OF

HON. WATSON C. SQUIRE,
OF WASHINGTON,

IN THE

SENATE OF THE UNITED STATES

February 28, 1895.

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SPEECH
OF
HON. WATSON C. SQUIRE.

The Senate having under consideration the bill (H. R. 8518) making appropriations for sundry civil expenses of the Government for the fiscal year ending June 30, 1896, and for other purposes.

Mr. SQUIRE. I offer the amendment which I send to the desk.

The PRESIDENT. The amendment will be stated.

The SECRETARY. On page 79, after line 21, it is proposed to insert:

For an investigation of the coal and gold resources of Alaska, \$5,000.

Mr. SQUIRE said:

Mr. PRESIDENT: I wish to say a very few words on this subject.

What little is known of the geological history of Alaska as regards the mountain system, which forms part of the continuous mountain chain of the west coast of our continent, points to a considerable analogy with that of the western slope of the Sierra Nevada in California, so well known as a great gold-producing region.

It is a well-known fact that the geological conditions vary very much in all the different gold-producing regions of the world, and a want of knowledge of these peculiarities is the cause of many failures of mining enterprises, a great waste of capital, and, often absolute ruin to the pioneers who undertake the development of the mineral veins without previous knowledge of their geological peculiarities.

It appears to me that it is one of the most prominent functions of the United States Geological Survey to make the preliminary investigations, and thus give miners and capitalists some surer basis to work on.

It has been proved that Alaska is rich in mineral resources, and by the efforts of the hardy and adventurous miners who have had the courage to make the pioneer efforts to develop those resources, the output of gold is steadily increasing. In 1880 the amount of gold recorded as produced in Alaska was \$5,951, in 1892 it was \$1,000,000, and the amount is steadily increasing.

There is a certainty, also, that the actual amount of gold produced is much larger than is shown in the official reports, as there are a large number of individual miners who carry away and sell the gold they obtain. It is therefore a certainty that the actual amount extracted is very much larger than indicated by the figures I have quoted.

Dr. Day, the expert of the Geological Bureau, prepared a careful work entitled Mineral Resources of the United States, being the edition of 1887, in which he gives the statistical matter relative to gold and other minerals in Alaska. I shall ask to have inserted in my remarks the list which appears in this volume. I shall not take

the time to read it at present. The list will be found on pages 695 and 696 of the volume to which I have referred.

By unanimous consent the matter was ordered to be inserted in the RECORD as follows:

ALASKA—MINED.

Mineralogical name.	Common name.	Remarks.
Argentite	Silver glance	Glacier Bay, in dolomitic limestone.
Berthierite.....	Sulphide of antimony and iron.	Glacier Bay, associated with silver and gold.
Coal, var. lignite.	Lignite	Cape Lisburne, Arctic coast, occasionally utilized by whalers and United States revenue vessels.
Galenite.....	Galena, sulphide of lead.	Juneau, associated with pyrite and mined for gold and silver; Golovin Bay; auriferous.
Garnet	Garnet	Large crystals of iron garnet obtained by natives at Wrangel.
Gold.....	Gold.....	Juneau, Douglas Island, Silver Bow Basin, Sitka, Yakutsk, Berner's Bay, and numerous placers on tributaries of the Yukon. The Alaska gold fields contain free gold in quartz veins and irregular lodes, auriferous sulphurets, and shallow placers.
Pyrite.....	Pyrites, iron sulphuret.	Auriferous, at Douglas Island, mined for gold.
Silver, native.	Wire silver.....	Glacier Bay, associated with native copper.
Sphalerite.....	Blende, black jack..	Juneau, mined for gold and silver.
Tetrahedrite ..	Gray copper.....	Glacier Bay, mined for silver and gold.

ALASKA—NOT MINED.

Asbestos	Asbestos	Reported in several localities.
Calcite	Limestone	Near Sitka, Kielisnoo, Glacier Bay, and elsewhere.
Copper	Native copper	In small quantities, Glacier Bay; also at headwaters of Copper River.
Chalcopryite ..	Copper pyrites.....	Islands of Alexander Archipelago.
Coal, bituminous.	Coal	Reported at several places; more properly lignite (?).
Gold	Gold	Many unworked placers, especially on the Yukon and along the coast.
Galenite	Galena, sulphide of lead.	Several unworked claims.
Graphite	Plumbago, black lead.	Near Port Clarence, Glacier Bay, Golovin Bay.
Lignite.....	Lignite	Coast of Arctic Ocean, near Cook Inlet, Admiralty and Kuiu islands, Woody Island, on Kobuck River and tributaries of the Yukon.
Muscovite	Mica.....	Reported in considerable quantities at various points.
Pyrite	Pyrites, iron sulphuret.	Near Sitka and at many other points; often auriferous.
	Silver.....	Silver ores, mainly with base sulphurets, at various points, not worked but thought to be available.

Dr. Day states that—

There is plenty of gold in Alaska, and that a great deal of money could be made there if some company would undertake to furnish transportation facilities for reaching the mines. The Treadwell mine, which is the only great capitalized mineral property in Alaska, is one of the most profitable in the world, but that is due not so much to the richness of the ore as to the practical business ability and economy shown in its management.

"There are hundreds of mines in this country," said Dr. Day, "with much richer deposits than are found on the Treadwell property that do not pay at all, while that yields big dividends. It is simply a matter of prudent and able management. The same can be said of the Homestake mine at Deadwood, which is very similar in the character of its ore and in its methods of management.

"On the Yukon River and its branches and feeders there is plenty of placer gold, and the further you go up the better it gets, but there is no way to reach that country except by crossing the mountains on foot from Sitka or by going up the Yukon River in the spring, when it is clear of ice. A little steamer commences running every year about April, and makes regular trips for the benefit of tourists and miners until the water freezes up in the fall; but owing to the rapids it is able to go but a comparatively short distance, and then the miners have to get canoes, dugouts, and other boats, and make the rest of the distance the best way they can.

"The current is swift, the journey is slow, and attended with great danger. The miners carry supplies for the entire season, and if they happen to meet with an accident they are entirely dependent upon the generosity of others. They go up as early as they can in the spring and stay as late as they can in the fall, but they scarcely ever get more than six months' work out of the year. They make good wages as a rule, but there is a great deal of luck about it, and most of the work is done with no other facilities than a pick and a pan. Occasionally some capitalist brings in a cradle, and his name is celebrated for enterprise all through the camp.

"The winter is terribly cold and long and dreary, and unless a man is very well housed and has plenty of provisions he would not do well to remain in the camp after snow flies. Two or three years ago an Englishman wintered way up the Yukon, but he did not leave his cabin the entire season. When he came away he swore that the aurora borealis was not visible at the latitude of the Yukon River, but it turned out that he had never been out of his cabin and the windows all looked the other way.

"If a company should be organized to develop those regions for gold, as the Hudson Bay Company worked British America for furs, it would make a great deal more money. There is plenty of coal in Alaska," Dr. Day added, "and there are lead mines within the Arctic Circle."

Coal exists also in Alaska, as was well known to the Russians for many years before the purchase of the Territory by the United States. One mine was opened by them on the shore of Coal Bay in Grahams Harbor, but the operators having followed the seam under the bay, the water broke through and the mine was abandoned. Later another mine was opened near the first, and considerable coal was taken out; but with the transfer of the Territory to the United States all operations ceased.

Within the last few years attention has again been directed to the coal deposits, and several veins have been discovered measuring from 5 to 6 feet in thickness and traceable for a distance of 2 miles.

The Report on Alaska and Its Resources, W. H. Dall, 1870, pages 473-475, describes the occurrence of coal. On page 475 the analysis of coal from Cook Inlet, Alaska, shows 49.89 per cent fixed carbon, 39.87 volatile combustible matter, 7.82 ash, 1.25 moisture. This is of a higher grade than the Nanaimo coal of Vancouver Island, but the supply is too limited for commercial use. Only the outcroppings of Cook Inlet have been examined. No geological investigation has been made as to the occurrence of commercial coal elsewhere in this region.

If the appropriation is made for the investigation of the coal and gold resources of Alaska, it should be made immediately available, as the geologist should leave Washington in April.

At no place on the Pacific coast can the development of coal mines prove of greater importance than on the coast of this far northwestern Territory.

It is certain that a systematic examination of its mineral deposits by scientific geologists will be of inestimable value in aiding the development of the country and giving direction to the hitherto unaided efforts of the pioneers in the mining industry.

I have other matters, which I shall not take the time of the Senate

to read. I will ask to have published with my remarks an extract from the "Mineral Resources of the United States for 1891," in relation to coal, contained in a paper by E. W. Parker, found on page 35.

ALASKA.

At no place on the Pacific can the development of coal mines prove of greater importance than on the coast of this far northwest Territory. The existence of coal in Alaska was known to the Russians for many years before the purchase of the Territory by the United States, and one mine was opened by them on the shores of Coal Bay, in Grahams Harbor, but as the operators (the Russian-American Company) followed the seam under the bay, and having cut into a stream of water, the mine was flooded and abandoned. Later another mine was opened near the first, and considerable coal was taken out but with the transfer of the Territory to the United States all operations ceased, and until quite recently no further attempts at mining coal were made.

In the last few years attention has been again directed to these deposits, and indications point to the establishment of a flourishing industry at an early date. In the summer of 1891 a party of prospectors started from San Francisco for the purpose of examining deposits of coal on the Island of Ungah, one of the Shumagin group, at the southwest point of the Territory. The party, of whom Mr. F. W. Worster and Col. S. Lucas were prominent members, returned to San Francisco in November. They report the existence of several veins, measuring from 5 to 6 feet in thickness and traceable for a distance of 2 miles. A tramway has been built from the mine to a bunker with a 350-ton capacity at tide water.

Then I have an extract from the Mineral Resources of the United States, for the calendar year 1892, on the "Progress of the precious metal industry in the United States," by F. S. Emmons.

ALASKA.

The general trend of the mountain systems of the west coast of our continent runs more to the west of north than does that of the coast line itself; hence, from Washington northward through British Columbia to southern Alaska, an ever-increasing portion of these mountains have in part run out into the ocean, and form the remarkably continuous chain of islands which lend so much scenic beauty to the Alaskan coast.

What little is known of their geological history points to a considerable analogy with that of the western slope of the Sierra Nevada, viz. an uplift in Post-Jurassic or early Cretaceous times, followed by a deposition, in comparatively shallow waters, of later Cretaceous and Tertiary beds, with local development of important coals and frequent exhibitions of eruptive energy continued down to comparatively recent geological time.

As to the Alaskan peninsula proper, beyond Mount St. Elias, where the coast line takes a trend due west and then southwest, still less is known geologically, for explorations have been confined to the immediate banks of the Yukon River, which is either so far north or so far in the interior as to be beyond the beneficent influence of the Japanese gulf stream, which alone renders the immediate coast line of southern Alaska inhabitable during the colder part of the year.

It is known that the coal-bearing Laramie rocks extend far northward toward the Arctic Circle in the interior, and that the cross chain of the Aleutian Islands, which extends southwestward from the point of the peninsula, is eruptive and probably of recent origin; but while it may be considered probable that geological representatives of the older rocks, which form the mountain chains farther south, extend into the peninsula, the determination of this fact is not of much evident importance to the mining industry, since climatic conditions would appear to be such as to preclude extended mining operations there.

It is the island belt and the immediate shores of the mainland in southern Alaska, with its comparatively mild climate and easy water transportation over inclosed waters, that offer the best opportunities for the systematic development of the mineral wealth that geological conditions show must exist in the region. The development of this wealth may be said to have commenced with the decade, and the first step were taken by the placer miners with their gold pans, washing the sands of the streams and the debris from the hillsides. They did not confine themselves in their explorations to the coast belt, but crossed the mountains to the waters flowing into the Yukon River.

Here gravels rich enough to pay under primitive methods have been found, and from the Yukon district, on Forty-Mile Creek, over a quarter of a million dollars' worth of gold is said to have been obtained without the use of mercury. It is quite impossible to determine with any accuracy the amount of gold actually produced by such workings, on account of the number of individual miners who carry away and sell the gold dust they obtain; hence, the figures given below may be taken as considerably below the actual amount extracted. It seems

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doubtful, however, whether this interior country, where, owing to the severity of the climate, it is possible to work less than a third of the year, and the expense of transporting supplies over the mountains is very great, will ever become the scene of systematic mining.

In the coast belt, however, explorations consequent upon placer mining have already led to vein mining. One important mine, the Treadwell, upon Douglas Island, in latitude 58°, produces, however, two-thirds of the estimated output of the Territory. It is a quartz vein 400 feet in width, carrying free gold and auriferous pyrites, which outcrops on a steep hillside running down to the seashore. The ore is of such very low grade that were it not for the peculiarly advantageous situation of the mine, which reduces cost to a minimum, it could hardly be worked at a profit. As it is, however, good management and an intelligent expenditure of capital have developed a large paying mine, which has produced during the past four years an annual average of nearly three-quarters of a million of gold, and has had a most beneficial effect in stimulating systematic mining in the region.

The mineral belt as thus far developed has a longitudinal extent of about 100 miles in a northwestern and southeastern direction, but is said to be only a few miles wide, and, even should it prove to be geologically wider, climatic conditions will probably confine the area of profitable working to the immediate proximity of the ocean. The general geological conditions that prevail in this belt, as far as known, show a close resemblance to the gold belt of California; like the latter the values are principally in gold, which is accompanied in certain parts of the region by silver, galena, and copper ores. It is probable, however, that in this colder region the limit in depth of free gold or oxidized ores will be sooner reached and the miner be brought to face the problem of profitably treating auriferous sulphurets which has so often proved an insurmountable obstacle to the continued development of gold mines. This obstacle has, however, already been successfully overcome in the Treadwell mine by the adaptation of the chlorination process.

The annual product of the Territory, which is given as exclusively gold (the silver product being comparatively insignificant), shows a steady increase during the decade. This increase is remarkable rather for its regularity than its amount, and is hence of more favorable import for the permanency of the development of the mineral resources than would be one subject to violent fluctuations, for while the discovery of exceptionally rich ore bodies undoubtedly causes a rapid development of the district in which they occur, the reaction which follows the inevitable exhaustion of such bodies may more than counteract the good effect which they have had, so far as its permanent prosperity is concerned.

Production of gold in Alaska since 1880.

Years.	Value.	Years.	Value.
1880	\$5,951	1887	\$675,000
1881	15,000	1888	850,000
1882	150,000	1889	900,000
1883	300,000	1890	762,000
1884	200,000	1891	900,000
1885	300,000	1892	1,000,000
1886	446,000		

I merely wish to say in conclusion that I think while we have the Geological Bureau we ought to make it of advantage to the people of the extreme northwestern part of the country. It may be said that the appropriation already made for that Bureau is sufficient to cover the proposed investigation in Alaska. I wish to address myself to that point for one moment, and then I shall take my seat. In 1891-92 the appropriation was \$115,000; in 1892-93 it was \$50,000; in 1893-94 it was \$70,000; in 1894-95 it was \$100,000. In addition to the appropriation of \$115,000 for the year 1891-92 the sum of \$37,200 was appropriated for salaries of geologists. This was cut down in 1892-93, under the Carey amendment, \$13,700, and the amount has not since been changed.

In the pending bill the total appropriation for geology, including salaries, is fixed at \$113,700. Owing to the large reduction as

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compared with the appropriation of 1891-93 it is not deemed advisable, without action of Congress, to divert the money that is now being used in the geologic work in the States for investigations in Alaska.

The PRESIDING OFFICER. The question is on agreeing to the amendment.

The amendment was agreed to.

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